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Transcribed from a t.v. telephone recording.

H O R I Z O N

PESTICIDES AND POSTERITY

Recorded from transmission.

30th May 1964.

VOICE: But is it enough to admit we don't know? Ought our attitude to be more urgent? Here in the studio to discuss the problem further are Lord Rothschild, an industrial research director, Mr. Robert Boote of the Nature Conservancy, and with them a zoologist from University College, London, John Maynard Smith.

SMITH: ~~Fraser~~ Darling suggested in the film we've just seen, that perhaps if Rachael Carson had played on people's emotions a bit and had used half truths like picking out that part of the data which supported her case and ignoring the rest, then she was really only playing the chemical industry at their own game, and that they tended to do the same thing. Rothschild, would you like to comment on this, do you think this is a fair criticism of the chemical industry?

ROTHSCHILD: I don't honestly think they play on the emotions of people - I thought the chap who spoke after him gave a fairly good and clear account of some industrial chemical firm.

SMITH: He didn't mention any of the cases which Rachael Carson mentioned, for example in which - or cases we've heard of since - in which insecticides have led to results which were not really predicted, the death, if not of man, at least of other organisms, in very large numbers.

ROTHSCHILD: Yes, he did say, Fraser Darling, didn't he, that Rachael Carson had selected her evidence as if she was playing a game. This seemed to me to be a rather distasteful concept in a serious problem. And not what one expects a reputable scientist to do.

BOOTE: With respect, I think we're in the post-Carson era now, I don't think there's much point in going - having a discussion about what went on before Rachael Carson. Her book was necessary, I've heard Dr. Edson himself say that. But I would like to take some of the wider issues that emerge here. First of all, I don't think it came out clearly that ^{conservationists} accept that chemicals are an important tool in the control of the environment. Most ^{conservationists} I'm concerned with do accept that. What we're concerned to get is the wide selection and wise use of chemicals over the long term.

SMITH: ... I mean I feel that Edson seemed to me to be a reasonable and responsible man - from - I've never met him, but from the remarks we've just seen. What other precautions would you like him to take other than those that are taken by chemical firms before they're put on the market?

BOOTE: Well I think Edson said at Cambridge last November, he'll forgive me because I know him well, if I don't get the quotation right, that the chemist could create in one year, problems for an ecologist which would take a decade to solve.

ROTHSCHILD: Problems for an ecologist? (YES) Yes, he of course doesn't solve any of these problems in under a decade as Professor Darling ^{said}, so the remark doesn't really help very much.

BOOTE: It helps to the extent that it shows where one of the

OUTSIDE BROADCASTS
SCIENCE & FEATURES

1) Alex Joan
2) Phil
3) Peter
4) Robin
CAMERA SCRIPT
BBC-2
"HORIZON"

"Pesticides and Posterity"

RECORDING: Friday, 29th May, 1964

Transmission: Saturday, 30th May.

STUDIO: RIVERSIDE 2

RESPONSIBILITIES:

Producer	Philip Daly
Assistant	Joan Scott
Director	John Dutot
Designer	Norman James
Research Asst.	David Cordingley
T.O.M.	Peter Hills
Sound Supervisor	Kevin White
Lighting "	Brian Hawkins
Vision Mixer	Gladys Davis
Floor Manager	Tom Savage
Floor Assistant	Mike Cattawood
Make-up	Mrs. Grigsby
Crew	14

TIMINGS:

4.00 - 6.00 p.m. Camera Rehearsal. (With TK 24 - 16
and TK 24 - 17)
6.00 - 7.00 p.m. DINNER BREAK
7.00 - 7.30 p.m. Line-up
7.30 - 7.50 p.m. Camera Rehearsal
7.50 - 8.00 p.m. Line-up check.
8.00 - 9.30 p.m. RECORD. (WT/6T/22627)
Edit on UT

PARTICIPANTS

Lord Rothschild, F.R.S.
Mr. Robert Boote
Mr. John Maynard Smith

Arrival Tim
7.15 p.m.

Project No. 72/2/4/4136.

"HORIZON"

great weaknesses lies in our present system. It helps to show that in many industries there are people producing things which have an impact on the environment and these people are not always aware like Dr. Edson is aware, of the repercussions of these actions. This is I think, a fault in the educational system. It doesn't throw up people who are equipped to appreciate all the many disciplines that should come into these problems.

ROTHSCHILD: I felt very sentimental when Fraser Darling was talking, because it reminded me of when I was a little boy, my father had created the Society for Promotion of Nature Reserves, and my earliest recollection was being sent out by him into the garden when I was about four, to catch a funny sort of orange-tip. It had one wing with an orange tip on and the other not. And he knew what that meant, it was a very unusual type. And this thing.... reminded me of this and made me feel a little bit nostalgic and confused. Because at the same time as Shell's chief scientific adviser in this country of course I see the other side as well, the Edson one. The thing that struck me was that Fraser Darling is a little bit old-fashioned and I don't like seeing people dying in the streets, of starvation, or that horrible leg we saw in the programme of these people. And so one has a feeling of - rather of sort of confusion about the whole matter, which how to weigh these various factors up - that's what rather worries me. I mean the ecologist rants on one side and the other chap on the other but nobody seems to be able to equate these different factors.

SMITH: Well I was going to come up to that, perhaps we can come on to that in a minute. I was going to raise just one more thing out of Fraser Darling's film if I might, which was his suggestion that - and let's just confine this for the moment to England - since it's the use in England that we might immediately discuss - he suggested that little reservoirs of wilderness that while a certain amount of nature, if not at least in its primeval state, at least in a fairly unagricultural state, was a necessity - would you share that? I mean ..

ROTHSCHILD: Well, when he showed this coppice, I again felt rather nostalgic, then it passed through my mind that it was probably full of rabbits, which were eating all the crops round and that a hell of a lot of people would be willing to shoot pheasants out of it. So that I don't think one got the complete sort of idyllic picture of this little coppice really right from what he said.

BOOTE: No but isn't it true that some of the most vociferous people against chemists in the past couple of years have undoubtedly been the sportsmen who as Rothschild has said, those people who shoot pheasants and so on. I think it was FIELD that many years ago pointed out the grave dangers of the organic chlorines. I think it's quite pointless to start arguing on this sentimental tack, frankly, I think that the chemical industry has so much to contribute that it's rather unnecessary to argue about those minor issues.

ROTHSCHILD: You mean coppices..?

BOOTE: No, the question as to whether it's sentimental or there's rabbits there, or something like that. I think we need wilderness, we need much more space for recreation outdoors, enjoyment of the natural scenery. And in this the chemical industry can help. There's no doubt about it. One of the big results of chemicals at the moment is the intensification of production in a given area.

ROTHSCHILD: Well Smith, there's something you said which rather worries me. You said a moment ago, why don't we concentrate on England. Now you're an eminent scientist and you therefore have an international attitude. And I think we should not consider these problems purely from the point of England we should consider them on a

world basis. I don't feel in this world of science or ecology that you could restrict yourself to a small country where fortunately we have very little insect borne disease, and no starvation.

SMITH: Look, I would accept this Rothschild, of course I would; I do think - if I could go back to something you were saying earlier, that we're struggling with the balancing of - almost of imponderables here in deciding things, that in England the balance may go down slightly differently to what it would in India perhaps. (CERTAINLY) But in India they're not worried --- in India they're not worried about the availability of wilderness but they are worried about the possibility of starvation. Here, democracy

ROTHSCHILD: The existence of starvation, not the possibility of it in India.

BOOTE: Yes, the point though about the overseas and under-developed countries is surely that there we've got to bring them much more than chemicals, we've got to give them knowledge, of modern techniques in husbandry, we've got to show them all the alternatives. I mean, it is fact, that one of the problems in the locust situation is that nearly all the sprays used invariably kill off birds, which eat insects, thus creating - thus paving the way for further plagues. You can't carry on indefinitely slaughtering things and then slaughter other things which create the need for more slaughter.

ROTHSCHILD: But look here, where you get a plague of locusts such as we saw at the beginning of this programme, and they're the most terrifying things one can see in reality, you aren't seriously saying are you, you shouldn't have a crack at it because some lovely birds will come along in due course and eat them up. And by that time the country is decimated - decimated.

BOOTE: No one is suggesting that. What one is suggesting is that one regards this period at the moment while there's only three thousand million on the earth, as a period mainly for trial, experiment, for refining these techniques which the chemical industry is....

ROTHSCHILD: I agree - I agree with you entirely

BOOTE: And therefore any urgency there may be now will be much greater in the year 2000, there's going to be six thousand million people then knocking around, we're going to need a lot more food, we're going to need a lot more space. I would like to see the chemical industry regarding this decade as that of experimentation.

ROTHSCHILD: Well, I think they do you know. I think most of the big manufacturers of pesticides realise that we're at the end of an era now, of a particular type of pesticide. But of course the problem is how long does that end of an era last? I mean, now you say it's the jet age, but you can still get into a jolly good pistonoid engine aircraft if you want to. And it's just a question of how long it is, this end of an era. It may be ten years, it may be fifteen years, no scientist can predict that. In the meanwhile you have troubles like major swarms of locusts, and you just can't say let's hope the birds come along and eat them up.

SMITH: Well no, but on the question of the specificity of insecticides, where there does seem to be some disagreement of opinion. I got the impression that Fraser Darling rather wanted to use a sort of magic bullet which would kill just the pests and nothing else, Edson was arguing that this was all very well, but since there were hundreds of pests, you'd have hundreds of different specific insecticides, and one can quite visualise both the expense and the muddle.

that this would create. But how do you feel about this, Boote, do you think it's fair to ask for specific insecticides?

BOOTE: It's very difficult. Edson himself has referred to the need to get a broad (?) of services and this is inevitable. What I would like to point out though is that having this tool, this developing tool from the chemical industry requires a much greater sense of responsibility on the part of everyone, managers, operatives, and the public. We haven't got that yet. I don't like the idea of nineteen million gardeners and three hundred thousand farmers, all with a potential finger on the trigger, it doesn't sound sense to me. So that if we talk of specificity, I would like to talk in a ^{proper} ~~skillful~~ of licensed operatives, who have been trained in the use of these things.

ROTHSCHILD: I think the licensed operatives would be an extremely good idea. But I want to take you up on one point about specificity. I agreed with what I think Maynard was implying ... and that is that you can ask for a specific insecticide, in the sense that it will be at any rate specific to insects. And I predict that within ten years there will be such insecticides which will take account of the main differences between an insect and say a mole. And I think it's quite right that we should ask for this and I'm quite confident we'll get it. But the trouble is to know how long a particular piece of scientific research is going to take.

SMITH: There was one point and maybe this is some my own professional training which is coming out at the wrong moment, but in all the very splendid tests that Edson listed, nobody seems to have mentioned in the film or in any of the ^{reports} I've mentioned, the question of mutagenic tests. Are they made?

ROTHSCHILD: Oh, yes, I mean, the chemical industry is very conscious of the possibility that certain classes of compounds may be mutagenic. And tests for this are done, I don't think in fact, Edson could possibly have gone through all the tests that are made by his firm in the time he had at his disposal.

BOOTE: I think a point also that didn't come out is that the ecologist who's still learning his trade, is bringing to the chemist a large number of tests, as you know, which are being used by the chemist being put into the formulating stage of the product. Now this is absolutely vital, it's no use having a manufacturer devoting a lot of money to getting a product, and then finding that there's something - some simple answer missing. So . . . got to be a team job between ecologists and chemists.

ROTHSCHILD: Well, we've started that now, haven't we. passing era.

BOOTE: Yes, we have indeed, this is why I call it the point of

SMITH: I would like to go back to a point that I rather chased you off a moment ago, Rothschild, this question of imponderables. If we can think about insecticides, you can measure the advantage of an insecticide, in terms of the number of acres of potatoes that you save by using it. You can't easily measure the disadvantage in the same terms. It isn't always the same way round. I remember that when I was involved in a comparable controversy over the radiation to expect from atomic bomb tests, you could measure the damage in terms of people killed, or genetic deaths, you couldn't measure the advantage in comparable terms. Is there any - I mean I know it's a big order, at this time in the programme, but is there a way round this difficulty, where you have imponderables?

ROTHSCHILD: Well I think that there is only one way round which is the normal method, and that is to try and get somebody like a judge, an impartial body, really to study the relative advantages and disadvantages of these various things we've been talking about, and I don't think this has been done yet. And if you look for instance at the terms of reference of one of the committees whose name is on the programme, I mean entirely prejudge the issue. Similarly I have no doubt that there are some people who shout too much in the other direction.

SMITH: Prejudge by using the word toxic in the title of the committee?

ROTHSCHILD: Yes, which as you well know is completely meaningless, I mean salt is toxic, if you eat two pounds of salt now you'd be in a very poor state in a few minutes.

ROOTH: One other point - I think the point is here that if we don't use these chemicals wisely and well, and if we kill off some species, or leave for posterity some soil - some land that's desecrated we shall have failed, there's no two ways about it. We shall have shown an intellectual and moral barrenness. I think if the organisation man today, everyone talks of the age of the organisation man, most of these problems in the end come back to plain straightforward co-operation, between scientifically based people like Edson, and scientists like Darling. And we've got to get much more of that. There's no point in arguing so many of these quibbles about whether one kills off an odd thing here and there, things are going to be killed, there's got to be some risk, we want to ensure there's the minimum of risk, and the maximum of long-term value.

SMITH: Can I put a last point to you, again, perhaps it's my own professional training as a zoologist, that's slightly worrying me, we've I think throughout the programme talked as if human beings were actually our own standard of value. And one can see that when human beings are starving in the streets, this may well be the case. Do you think that the criterion of killing other organisms, that this is just simply a matter we should decide by benefit to man, or do you think they have rights of their own?

ROTHSCHILD: I personally am more interested in human beings than I am in wasps.

ROOTH: Yes, I think our answer shortly, is that we start with the conservation of man, but without wild life, man is greatly impoverished. He loses his status. We are getting tools now which can help to create environment. If we don't use those tools wisely we are doing a very sad thing for posterity.

SMITH: I think I'd almost like to put a slight note of disagreement with both of you on this one, as a matter of fact. I'm not at all sure in my mind that the only reason why one should refrain from killing animals is that perhaps it's nice for people to be able to look at them. They've taken some thousands of millions of years to evolve, they're things in their own right, this I admit is not a thing that one can argue about reasonably, perhaps, it's a question of what one feels. But I mean, admittedly if you have to choose between a human being and a wasp, you're going to choose the human being. But I think perhaps a word should be put in for the animals. Do you think I'm being sentimental about this Rothchild?

ROTHSCHILD: I don't think you're being sentimental, but I think you're talking in a non-scientific way, which you have a perfect right to do.

ECOTE: This I think I would accept. These are aesthetic considerations, too, ethical considerations, and I think Rothschild has helped so much in nature reserves and so on, in the family name, that he wouldn't argue with you as a civilian - would you - a citizen?

SMITHE: Well, I think we shall have to call it a day there. We have perhaps agreed on rather more things, than the producer of this programme might have guessed that we were going to agree on, when he invited us to come here. But there is enough left perhaps for us to go on arguing when the programme is over.

M U S I C